UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KOICHIRO INOUE,
TOYOTAKA KINOSHITA
And MASAO ISHIDA

Appeal 2007-1803
Application 10/716,512
Technology Center 1700

Decided: September 7, 2007

Before BRADLEY R. GARRIS, THOMAS A. WALTZ, and
PETER F. KRATZ, *Administrative Patent Judges.*

GARRIS, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-7. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Appellants claim a microalloyed steel separable by fracture splitting at low temperatures which comprises particular constituents and amounts

thereof (claim 1). The Appellants also claim a fitting member produced from the aforementioned steel through separation by fracture splitting at low temperatures (claim 4).

Representative claim 1 is reproduced below:

1. A microalloyed steel separable by fracture splitting at low temperatures, which comprises from 0.15 to 0.35 wt% carbon, from 0.5 to 2.0 wt% silicon, from 0.5 to 1.5 wt% manganese, from 0.03 to 0.15 wt% phosphorus, from 0.01 to 0.15 wt% sulfur, from 0.01 to 0.5 wt% copper, from 0.01 to 0.5 wt% nickel, from 0.01 to 1.0 wt% chromium, from 0.001 to 0.01 wt% soluble aluminum, from 0.005 to 0.035 wt% nitrogen, from 0.0001 to 0.01 wt% calcium, and from 0.001 to 0.01 wt% oxygen, the remainder comprising iron and inevitable impurities, and which satisfies the following relationships 1 and 2:

Relationship 1,

$0.6 \leq Ceq \leq 0.85$,

wherein

$Ceq = C+0.07xSi+0.16xMn+0.61xP+0.19xCu+0.17x\ Ni+0.2xCr$;

Relationship 2,

$0 \leq T_{Tr} \leq 1.5$,

wherein $T_{Tr} = (C+0.8xSi+5xP)-0.5x(Mn+Cr+Cu+Ni)$;

wherein the microalloyed steel lacks vanadium.

The following references are relied upon by the Examiner as evidence of obviousness:

Vander Voort, "Embrittlement of Steels," ASM International, *Properties and Selection of Iron*, Carpenter Technology Corp., 7 pages, (1991).

Uno	JP 09-111412	Apr. 28, 1997
Robelet	US 5,769,970	Jun. 23, 1998

Claims 1-7 are rejected under 35 USC 103(a) as being unpatentable over Robelet in view of Vander Voort and Uno.[1] It is the Examiner's basic position that Robelet teaches or would have suggested each of the claim 1 constituents and amounts except for oxygen but that it would have been obvious for one with ordinary skill in this art to provide Robelet's steel with oxygen in the amount here claimed in view of Vander Voort (Answer 3-5).[2]

Appellants acknowledge that Robelet teaches adding calcium to patentee's steel composition (col. 4, ll.18-10) but argue that the reference contains no teaching or suggestion of the calcium amount required by claim 1. We recognize that the Robelet disclosure is silent regarding calcium amount. In our view, however, this silence evinces or infers that Robelet considered one with ordinary skill in this art able to determine effective amounts of calcium. This evidence or inference leads us to agree with the Examiner's conclusion that it would have been obvious for an artisan to determine effective calcium amounts for the Robelet steel compositions, thereby yielding calcium amounts within the range defined by claim 1. *See KSR Int'l Co. v. Teleflex Inc.,* 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007) (analysis need not seek out precise teachings directed to specific

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[1] The arguments in the Brief are directed to independent claims 1 and 4 only, and these independent claims are argued together rather than separately (Br. 9-19). Accordingly, in assessing the merits of the rejection before us, we will focus on independent claim 1 since this is the broadest claim on appeal.

[2] The Examiner's reliance on Uno involves dependent claim features only (Answer 4). Since Appellants have not separately argued the dependent claims, we need not discuss the Uno reference.

subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ).

Appellants further argue that Vander Voort would not have suggested using the here claimed amount of oxygen in the steel compositions of Robelet (Br. 13) as urged by the Examiner. According to Appellants, this is because Vander Voort teaches adding oxygen to enhance toughness/ embrittlement of iron rather than steel (*id.*). While this last point is correct (Vander Voort 1), we share the Examiner's determination that the enhanced toughness/embrittlement consequence of oxygen addition as taught by Vander Voort would have been expected by an artisan to also occur in Robelet's steel compositions due to the high iron content thereof (Answer 9). Significantly, this determination has not been contested by Appellants on the record before us, nor has the Appellants contested the Examiner's related determination that enhanced toughness/embrittlement would have been desirable in the steel of Robelet.

For a number of reasons, there is no convincing merit in the Appellants' argument that Robelet contains no teaching or suggestion of the other constituents and amounts required by claim 1. First, Robelet discloses these other constituent amounts in ranges which overlap those of claim 1 (col. 2, ll. 65-col. 3, l. 67), and therefore, it would have been obvious for an artisan to select Robelet's amount values which fall within the claimed ranges. *See In re Peterson*, 315 F.2d 1325, 1329, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003). Second, in Robelet's third example (col. 5, l. 46-col. 6, l.14), the steel composition includes 0.39 wt% carbon and 0.105 wt%

vanadium whereas the claim 1 composition differs only by (1) having a maximum of 0.35 wt% carbon and (2) lacking vanadium. As fully explained by the Examiner, it would have been obvious to modify this third example steel by lowering the carbon content to values within the claim 1 range and by eliminating the vanadium since Robelet expressly teaches modifying these constituents in this manner (col. 3, ll. 1-7 and 36-40).

Finally, we are not persuaded by Appellants' argument that the here claimed ranges are critical and therefore are not prima facie obvious (Br. 15). While the Specification teaches adding various amounts of certain constituents in order to achieve particular results, the applied prior art likewise teaches or would have suggested adding constituent amounts in order to achieve desirable results. For example, like Appellants' steel (Abstract at Specification 32), Robelet's steel is designed to be useful for the manufacture of a separable mechanical component (Robelet Abstract). Moreover, as correctly indicated by the Examiner (Answer 10-11), none of the claim 1 ranges have been shown by Appellants to yield unexpected results in comparison to the closest prior art which is Robelet.

For the above stated reasons, it is our ultimate determination that the reference evidence applied by the Examiner establishes a prima facie case of obviousness with respect to claim 1 which the Appellants have failed to successfully rebut with argument or evidence of nonobviousness. *See In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Therefore, we sustain the Examiner's § 103 rejection of claims 1-7 as being unpatentable over Robelet in view of Vander Voort and Uno.

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(iv)(effective Sept. 13, 2004).

AFFIRMED

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